NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ SCORE: \_\_\_\_\_ / 40

**Homework Assignment #1** *Due: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

1. Compare Democritus’ ideas about the atom with those of Dalton.

Democritus’ theory just stated that atoms were the smallest particles of matter and that different substances were made of different atoms. Dalton said the same things and a few additional things, which were:

* Atoms of the same element are identical (not true because isotopes were discovered)
* Atoms cannot be created, destroyed or divided into smaller particles
* Different atoms combine in whole number ratios to form compounds
* In a chemical reaction atoms are separated, combined or rearranged

1. What was Lavoisier’s contribution to the development of the modern atomic theory?

The Law of Conservation of Mass which states that matter cannot be created or destroyed in a chemical reaction.

1. What are the major points in Dalton’s atomic theory?

See the answer to number #1

1. What were the four elements according to the Greek philosophers?

Earth, Wind, Fire and Water

**Homework Assignment #2** *Due: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

1. Why did Rutherford conclude that an atom’s nucleus has a positive charge instead of a negative charge? Summarize the conclusions that Rutherford’s team made about the structure of an atom.

When Rutherford shot positively charged particles at gold atoms in gold foil, most of the particles went straight through the foil while some particles were deflected (bounced off) at angles. He proposed that the particles were hitting a dense positively charged center of an atom because like charges repel each other.

1. The isotope of carbon that is used to date prehistoric fossils contains six protons and eight neutrons. What is the atomic number of this isotope? How many electrons does it have? What is its mass number?

Atomic # = 6, electrons = 6, mass number = 14 (6p + 8n)

1. Fill in the following table:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Element | Symbol | # of Protons | # of Electrons | # of Neutrons | Mass Number |
| Magnesium | Mg | 12 | 12 | 12 | 24 |
| Polonium | Po | 84 | 84 | 41 | 125 |
| Iron | Fe | 26 | 26 | 30 | 56 |